



UU6043B

LINEAR INTEGRATED CIRCUIT

FLASHER IC WITH 18mΩ SHUNT

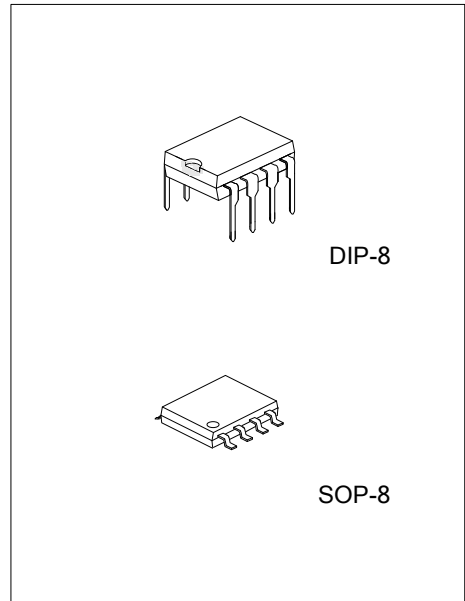
DESCRIPTION

The UTC **UU6043B** is a miconductor integrated circuit designed for relay-controlled automotive flashers where a high level EMC is required.

Lamp outage is indicated by frequency doubling during hazard warning as well as direction mode.

FEATURES

- * Temperature and supply voltage compensated frequency
- * Warning indication of lamp failure by means of frequency doubling
- * Relay driver output with high current carrying capacity and low saturation output
- * Minimum lamp load for flasher operation: $\geq 1\text{ W}$
- * Very low susceptibility to EMI



ORDERING INFORMATION

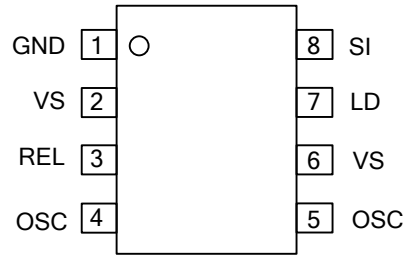
| Ordering Number | | Package | Packing |
|-----------------|----------------|---------|-----------|
| Lead Free | Halogen Free | | |
| UU6043BL-D08-T | UU6043BG-D08-T | DIP-8 | Tube |
| UU6043BL-S08-R | UU6043BG-S08-R | SOP-8 | Tape Reel |

| | |
|--|---|
| <p>UU6043BG-D08-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p> | <p>(1) T: Tube, R: Tape Reel</p> <p>(2) D08: DIP-8, S08: SOP-8</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p> |
|--|---|

MARKING

| DIP-8 | SOP-8 |
|-------|-------|
| | |

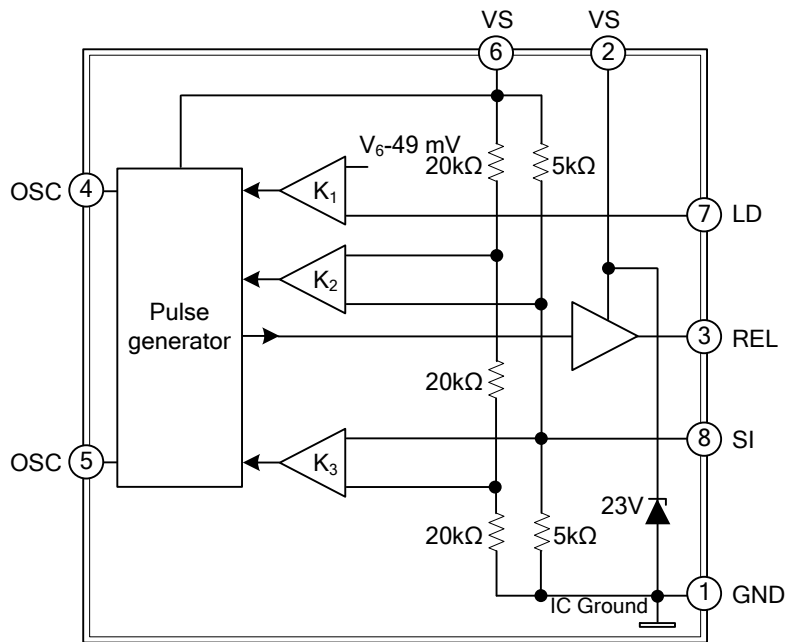
■ PIN CONFIGURATION



■ PIN DESCRIPTION

| PIN NO. | PIN NAME | DESCRIPTION |
|---------|----------|---------------------------|
| 1 | GND | IC ground |
| 2 | VS | Supply voltage |
| 3 | REL | Relay driver |
| 4 | OSC | C ₁ Oscillator |
| 5 | OSC | R ₁ Oscillator |
| 6 | VS | Supply voltage, Sense |
| 7 | LD | Lamp outage detection |
| 8 | SI | Start input (49a) |

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

Reference point Pin 1

| PARAMETER | | SYMBOL | RATINGS | UNIT | |
|----------------------------|------------------------|--------------------------|-----------|----------|------------------|
| Supply Voltage | | Pin 2 and 6 | V_S | 16.5 | V |
| Surge Forward Current | $t_p = 0.1 \text{ ms}$ | Pin 2 and 6 | I_{FSM} | 1.5 | A |
| | $t_p = 300 \text{ ms}$ | Pin 2 and 6 | | 1.0 | A |
| | $t_p = 300 \text{ ms}$ | Pin 8 | | 50 | mA |
| Output Current | | Pin 3 | I_O | 0.3 | A |
| Power Dissipation | | $T_A = 95^\circ\text{C}$ | P_D | 340 | mW |
| | | $T_A = 60^\circ\text{C}$ | | 560 | mW |
| Ambient Temperature Range | | | T_A | -40~+95 | $^\circ\text{C}$ |
| Junction Temperature Range | | | T_J | 150 | $^\circ\text{C}$ |
| Storage Temperature Range | | | T_{STG} | -55~+150 | $^\circ\text{C}$ |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

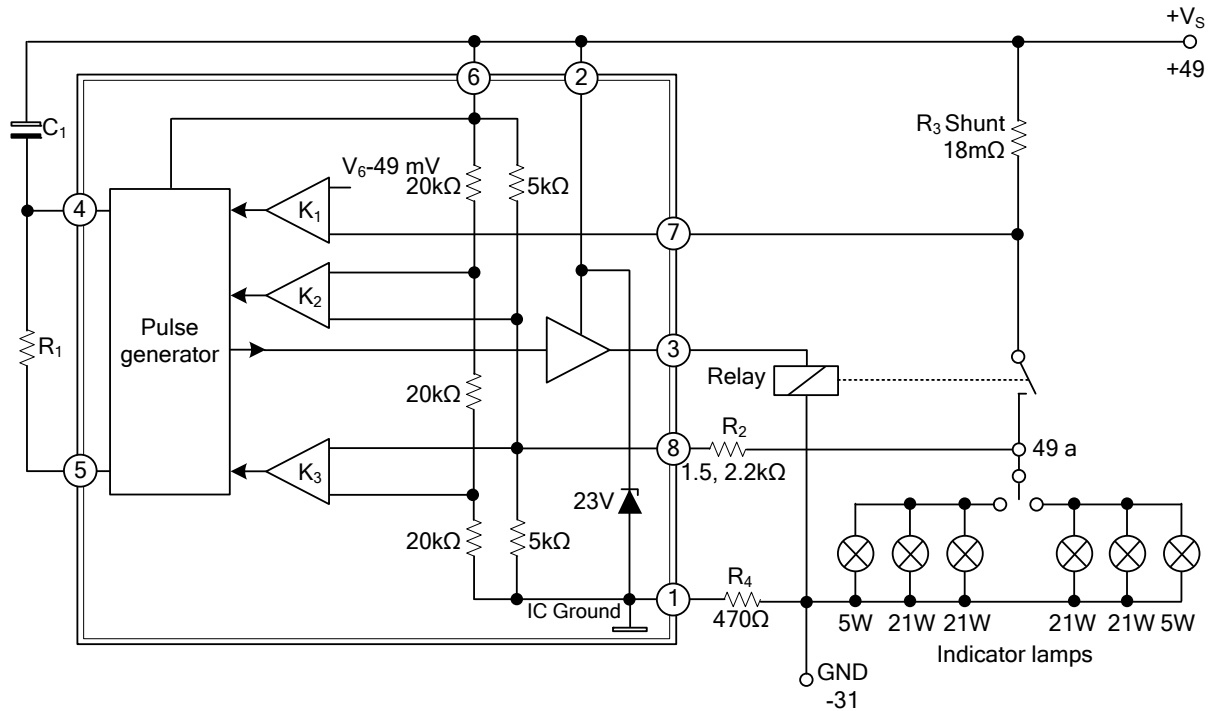
| PARAMETER | | SYMBOL | RATINGS | UNIT |
|----------------------------|-------|---------------|---------|--------------------|
| Junction to Ambient (Note) | DIP-8 | θ_{JA} | 110 | $^\circ\text{C/W}$ |
| | SOP-8 | | 160 | |

■ ELECTRICAL CHARACTERISTICS

Typical values under normal operation in application circuit (see Figure 1), $V_S (+49, \text{Pin 2 and 6}) = 12\text{V}$. Reference point ground (-31), $T_A = 25^\circ\text{C}$, unless otherwise specified.

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|------------------------------------|--------------|---------------------------------------|-----|------------------|-----|------------|
| Supply Voltage Range | V_S | Pin 2 and 6 | 9 | | 15 | V |
| Supply Current | I_S | Dark phase, Pin 2 and 6 | | 4.5 | 8 | mA |
| | | Bright phase, Pin 2 and 6 | | 7.0 | 11 | mA |
| Relay Control Output: | V_O | Pin 3 | | | 1.0 | V |
| Saturation Voltage Reverse Current | I_O | $I_O = 150\text{mA}, V_S = 9\text{V}$ | | | 0.1 | mA |
| Start Delay (Delay Time) | t_{on} | First bright phase | | | 10 | ms |
| Frequency Tolerance | Δf_1 | Normal flashing | -5 | | +5 | % |
| Bright Period | Δf_1 | Basic frequency f_1 | | 60 | | % |
| | Δf_2 | Control frequency f_2 | | 46 | | % |
| Frequency Increase | f_2 | Lamp outage | | $1.8 \times f_1$ | | Hz |
| Control Signal Threshold | V_{RS} | $V_S = 15\text{V}, \text{Pin 7}$ | 50 | 53 | 57 | mV |
| | | $V_S = 9\text{V}, \text{Pin 7}$ | 43 | 45 | 47 | mV |
| | | $V_S = 12\text{V}, \text{Pin 7}$ | 47 | 49 | 51 | mV |
| Leakage Resistance | R_P | 49A to GND | | 4 | 5 | k Ω |
| Lamp Load | P_L | | 1 | | | W |

■ TYPICAL APPLICATION CIRCUIT



Pin 4 and 5, Oscillator

The flashing frequency, f_1 , is determined by the R_1C_1 components as given by the following formula below

$$f_T \approx \frac{1}{R_1 \times C_1 \times 1.5} \text{ Hz}$$

where $C_1 \leq 47 \mu\text{F}$, $R_1 = 6.8 \text{ k}\Omega$ to $510 \text{ k}\Omega$

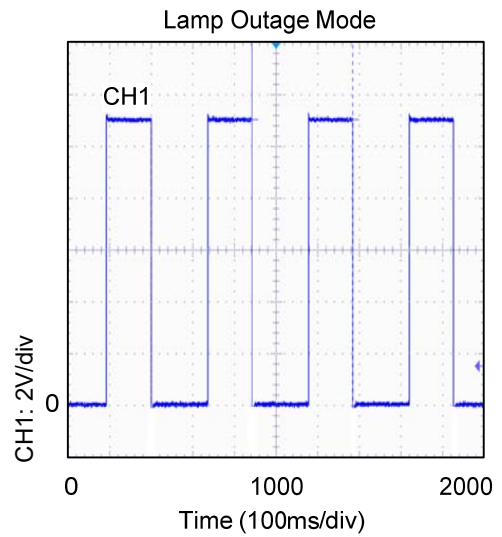
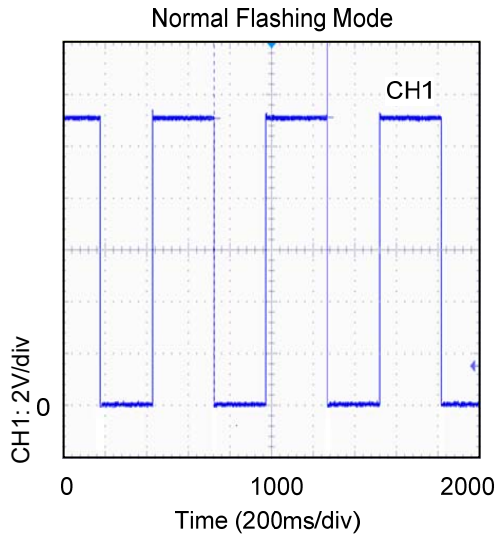
In case of a lamp outage (see Pin 7) the oscillator frequency is switched to the lamp outage frequency f_2 with $f_2 \approx 1.8 \times f_1$.

Duty cycle in normal flashing mode: 50%

Duty cycle in lamp outage mode: 40% (bright phase)

■ TYPICAL CHARACTERISTICS

$V_{CC}=12V$, $C_1=47\mu F$, $R_1=6.8K$, $T_A=25^\circ C$



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.